

such that one end of the channel terminates in a nozzle opening that is formed as part of the nozzle.

2. The microfluidic device of claim 1, wherein the channel has a cylindrical shape along at least a substantial length thereof, the channel being defined by a seamless cylindrical surface.

3. The microfluidic device of claim 1, wherein the channel is inwardly tapered such that the dimensions of the channel are greatest in the reservoir section and are at a minimum at the nozzle opening.

4. The microfluidic device of claim 1, wherein the channel is formed so that it is substantially perpendicular to both the first and second surfaces.

5. The microfluidic device of claim 1, wherein the at least one nozzle extends beyond the second surface and is substantially conically shaped.

6. The microfluidic device of claim 5, wherein the nozzle has an outside diameter equal to or less than about 50 μm .

7. The microfluidic device of claim 1, wherein the nozzle has an outside diameter equal to or less than about 100 μm .

8. The microfluidic device of claim 1, wherein the nozzle opening has a diameter equal to or less than about 20 μm .

9. The microfluidic device of claim 1, wherein the nozzle opening has a diameter equal to or less than about 50 μm .

10. The microfluidic device of claim 1, wherein a portion of the channel that is formed in the nozzle and that terminates in the nozzle opening is inwardly tapered toward the nozzle opening.

11. The microfluidic device of claim 1, wherein the at least one channel and the at least one nozzle are arranged in a geometrical array.

12. The microfluidic device of claim 1, wherein the body and the at least one nozzle comprise an injection molded structure that is formed of a polymeric material that can be injection molded.

13. The microfluidic device of claim 1, further including:

a conductive region formed on the second surface around a periphery of the at least one nozzle.

14. The microfluidic device of claim 13, wherein the conductive region is formed of metal and is electrically connected to an electric contact.

15. The microfluidic device of claim 14, wherein the electrical contact is formed on the second surface along a single edge of the body.

16. The microfluidic device of claim 1, wherein the channel has a first section in which inner channel surfaces are parallel, the first section at least partially defining the reservoir section and extending to the first surface, the channel further including a second section in which the inner channel surfaces are in a non-parallel relationship, the second section extending from the first section to the nozzle opening.

17. A microfluidic device comprising:

a body having a first surface and an opposing second surface, the body having at least one channel formed therein, the channel extending through the body from the first surface to the second surface, wherein the channel has a reservoir section that is open at the first surface for receiving a sample; and

at least one nozzle integrally formed with the body and disposed along and extending beyond the second surface, the number of nozzles equal to the number of channels with each nozzle being in fluid communica-

tion with one channel such that each channel terminates in a nozzle opening of the nozzle, wherein a diameter of the nozzle opening is equal to or less than about 100 μm and an outside diameter of the nozzle is equal to or less than about 150 μm .

18. The microfluidic device of claim 17, wherein a diameter of the nozzle opening is equal to or less than about 150 μm and an outside diameter of the nozzle is equal to or less than about 100 μm .

19. The microfluidic device of claim 17, wherein a diameter of the nozzle opening is equal to or less than about 20 μm and an outside diameter of the nozzle is equal to or less than about 50 μm .

20. The microfluidic device of claim 17, further including:

a device for sealing the reservoir section and for transporting the sample from the reservoir section through the channel to the nozzle opening where the sample is discharged.

21. The microfluidic device of claim 20, wherein the transport device comprises a displaceable member including a deformable, elastic polymeric cover sheet that is initially disposed across an open end of the reservoir section and a shaft that is connected to the polymeric cover sheet, wherein when the shaft is driven to an extended position, the polymeric cover sheet forms a seal with an inner surface of the reservoir section and forces the sample to flow toward the nozzle opening where it is discharged.

22. The microfluidic device of claim 20, wherein the transport device comprises a displaceable member including a base with a deformable seal extending therearound, the base being initially disposed across an open end of the reservoir section with a shaft being connected to the base, wherein when the shaft is driven to an extended position, the base is received within the reservoir section and the flange forms a seal with an inner surface of the reservoir section and forces the sample to flow toward the nozzle opening where it is discharged.

23. The microfluidic device of claim 20, wherein the transport device comprises a member having a bore formed therethrough with a gasket being disposed at a distal end of the member, the gasket forming a seal between the member and the reservoir section, wherein the member is in communication with a source of fluid that is introduced into the reservoir section to force the sample to flow toward the nozzle opening where it is discharged.

24. The microfluidic device of claim 23, wherein the fluid comprises a gas.

25. The microfluidic device of claim 23, wherein the fluid comprises the sample.

26. The microfluidic device of claim 23, wherein the gasket comprises an O-ring that is disposed between the distal end and the first surface of the body, the O-ring being free of interference with the fluid flowing through the bore into the reservoir section.

27. The microfluidic device of claim 17, wherein the body and the at least one nozzle comprise a single injection-molded structure that is formed of a polymeric material.

28. The microfluidic device of claim 17, wherein the at least one nozzle comprises an array of nozzles arranged according to a predetermined pattern along the second surface of the body.

29. The microfluidic device of claim 28, wherein the nozzle array includes a predetermined number of nozzles arranged in axial rows across the second surface.